

come for low-income families than for middle- and upper-income families. (See Congressional Budget Office, *Federal Taxation of Tobacco, Alcoholic Beverages, and Motor Fuels*, August 1990.)

Increase the Cigarette Tax. The current federal excise tax on cigarettes is 24 cents per pack. Raising it to 48 cents a pack would increase net revenue by about \$19 billion between 1996 and 2000. The President's Health Security Act proposed to raise the federal excise tax on cigarettes to 99 cents per pack. That change to the excise tax rate would increase net revenues by about \$49 billion between 1996 and 2000.

Increase Taxes on Alcoholic Beverages. Current federal excise taxes on beer and wine remain much lower than the federal excise tax on distilled spirits in terms of the tax per ounce of ethyl alcohol. The current tax on distilled spirits of \$13.50 per proof gallon results in a tax of about 21 cents per ounce of alcohol. The current tax on beer of \$18 per barrel results in a tax of about 10 cents per ounce of alcohol (assuming an alcoholic content for beer of 4.5 percent), and the current tax on table wine of \$1.07 per gallon results in a tax of about 8 cents per ounce of alcohol (assuming an average alcoholic content of 11 percent).

Increasing the federal excise tax to \$16 per proof gallon for all alcoholic beverages would raise \$21.8 billion between 1996 and 2000. A tax of \$16 per proof gallon would result in a tax of about 25 cents per ounce of ethyl alcohol. It would raise the tax on a 750-milliliter bottle of distilled spirits from about \$2.14 to \$2.54, the tax on a six-pack of beer from about 33 cents to 81 cents, and the tax on a 750-milliliter bottle of table wine from about 21 cents to 70 cents.

Index Cigarette and Alcohol Tax Rates for Inflation. Indexing cigarette and alcoholic beverage tax rates annually for inflation during the preceding year would raise \$5.4 billion between 1996 and 2000. Indexing those taxes would prevent inflation from eroding real tax rates and would avoid the need for abrupt increases in the future.

An alternative to indexing would be to convert current unit taxes on quantities of these goods to ad valorem taxes, which equal a percentage of the manufacturer's price. That method would link tax revenues to price increases, although it would tie revenues to the price of taxed goods, not the general price level. A shortcoming of the ad valorem tax is that it might create incentives for manufacturers to lower sales prices artificially to company-controlled wholesalers in order to avoid part of the tax.

REV-36 INCREASE TAXES ON PETROLEUM AND MOTOR FUELS

Addition to Current-Law Revenues	Annual Added Revenues (Billions of dollars)					Cumulative Five-Year Addition
	1996	1997	1998	1999	2000	
Impose Tax on Domestic and Imported Oil (\$5 per barrel)	15.6	20.8	21.0	21.3	21.7	100.4
Impose Oil Import Fee (\$5 per barrel)	7.0	9.7	10.2	10.6	11.2	48.7
Increase Motor Fuel Taxes by 12 Cents per Gallon	9.4	12.4	12.1	12.0	12.2	58.1
Increase Motor Fuel Taxes by 10 Cents per Gallon Each Year for Five Years	7.9	18.2	27.9	37.1	46.1	137.2

SOURCE: Joint Committee on Taxation.

NOTE: Estimates are net of reduced income and payroll tax revenues. Increases in federal government expenditures for energy products under these options are not estimated.

Increasing energy taxes could raise significant amounts of revenue, encourage conservation by making energy more expensive, reduce pollution, and decrease the country's dependence on foreign oil suppliers. The United States depends on foreign sources for about half of its oil and about one-fifth of its total energy. Recent experience illustrates that this dependence on foreign sources exposes the U.S. economy to potential interruptions in energy supplies and to volatile energy prices.

Imposing new or higher energy taxes would raise energy prices and reduce energy consumption, thus helping to promote conservation. To the extent that taxes on oil reduce the demand for imported oil, foreign suppliers would absorb part of the tax through lower world oil prices. To the extent that energy taxes reduce energy consumption, the taxes would also reduce carbon dioxide emissions and could, therefore, contribute to efforts to reduce global warming.

Energy taxes would have different effects on taxpayers in different parts of the country and with dif-

ferent incomes. Taxes that increase the relative price of fuel oil would have the greatest impact on consumers in the Northeast, and taxes that increase the relative price of gasoline would have the greatest impact on consumers in the West. In addition, taxes on gasoline and other energy products represent a greater percentage of income for low-income families than for middle- and upper-income families.

Taxing energy is not the only way of reducing dependence on foreign oil supplies. Stockpiling oil is arguably a better way of coping with the risks of increased dependence on imports because it would not artificially reduce current energy use by households and businesses. That argument is based on the premise that, aside from the problem of interruptions in supply, world energy prices accurately reflect real resource costs and thus already provide an appropriate incentive to conserve energy.

Impose an Excise Tax on Domestic and Imported Oil. An excise tax of \$5 per barrel on all crude oil and refined petroleum products--both domestically produced and imported--would raise revenues by

about \$100 billion from 1996 through 2000. It could increase the price of a gallon of gasoline or fuel oil by as much as 12 cents.

A tax on oil would increase the price that consumers must pay, giving them an incentive to use less oil either through conservation efforts or by switching to an alternative source of energy such as natural gas or coal. The tax would cause oil reserves to decline in value, and coal and gas reserves to increase in value. Those shifts in value would discourage exploring for and producing oil and would encourage producing coal and natural gas.

An oil tax, whether on all oil or only imported oil, would raise the costs for industries that use oil as their primary production input (for example, the petrochemical and paint industries). Consequently, domestic companies in those industries would find it more difficult to compete with foreign companies that would pay less for oil. To ameliorate that loss in competitiveness, imposing the same tax rate on the oil content of competing imports would be necessary. Such a tax would be cumbersome to design and administer and may violate the General Agreement on Tariffs and Trade.

Impose an Oil Import Fee. As an alternative to an excise tax on all oil, the Congress could impose the tax only on imported crude oil and refined petroleum products. An oil import fee of \$5 per barrel would raise revenues by about \$49 billion from 1996 through 2000.

An oil import fee would allow domestic suppliers to charge a higher price and still remain competitive with imports, providing an incentive to increase domestic crude oil production and a windfall to some domestic oil producers. Like the tax on all oil, the fee would also maintain incentives for conservation by increasing energy prices. Those effects would reduce U.S. dependence on foreign oil in the short term, although in the long term they might increase dependence by depleting U.S. oil supplies faster. Domestic and foreign oil are relatively close substitutes and, therefore, the difference in the prices consumers would pay for them would be slight. But foreign producers would receive a lower net price than domestic producers because of the fee. A large portion of that difference between the net price that do-

mestic and foreign producers would receive represents a transfer of income from domestic consumers to domestic producers. Consequently, the federal government would receive only about half of the increase in consumers' expenditures for oil under an import fee because the United States imports nearly half of the oil it consumes and demand is insensitive to price in the short run.

Because an oil import fee would reduce U.S. demand for imported oil, important U.S. trading partners might object to it. Under the terms of the United States-Canada Free Trade Agreement, Canadian oil imports would be exempt from an import fee. However, a similar exemption does not apply to Mexican oil under the North American Free Trade Agreement. Because imports from Canada now account for almost 14 percent of U.S. oil imports, the Canadian exemption would reduce the fee's revenue potential substantially. Legislation implementing a fee would require special rules to prevent other countries from avoiding the tax by shipping oil through Canada.

Increase Motor Fuel Excise Taxes. Federal motor fuel taxes were increased by 4.3 cents per gallon in the Omnibus Budget Reconciliation Act of 1993. They are currently 18.4 cents per gallon of gasoline and 24.4 cents per gallon of diesel fuel. Revenue from 6.8 cents per gallon goes into the general fund until September 30, 1995; after that, revenue from 4.3 cents per gallon will go to the general fund. The remaining revenue goes into the Highway Trust Fund and several related trust funds.

State governments also impose gasoline and diesel taxes, ranging from 7.5 cents to 27.75 cents per gallon. However, in comparison with motor fuel tax rates in other countries, many of which are well over \$1 a gallon, U.S. tax rates are still among the lowest in the world.

The average national price of all grades of gasoline has dropped from a peak of about \$1.40 per gallon in March 1981 to about \$1.20 in the fall of 1994. That represents a 14 percent price reduction in nominal terms and 46 percent in real terms. Therefore, an additional tax of 12 cents or even 50 cents per gallon would not put the total cost of gasoline above what consumers have already experienced in real terms.

A tax increase would reduce consumption of gasoline and diesel fuel by encouraging people to drive less or purchase more fuel-efficient cars and trucks. In addition, the tax would offset, though imperfectly, the costs of pollution and road congestion that automobile use produces. A rate increase on motor fuel taxes would not adversely affect U.S. producers relative to foreign producers because final consumers and the domestic transportation industry purchase most of the motor fuel.

Increasing tax rates on motor fuels would impose an added burden on the trucking industry and on people who commute long distances by car, who are not necessarily the highway users who impose the highest costs of pollution and congestion on others. Pollution and congestion costs are much higher in densely populated areas, primarily in the Northeast and coastal California, whereas per capita consumption of motor fuel is highest in rural areas. A 50 cent tax increase would produce significant adjustment

costs for people and businesses who have based decisions about where they live and work and their choice of vehicle on low gasoline prices. Phasing in the tax increase, however, would reduce those costs by allowing businesses and consumers more time to adjust.

Each additional penny of tax would generate roughly \$1 billion in revenues per year. A 12 cent increase would raise revenue by about \$12 billion per year. Alternatively, five successive annual 10 cent increases would raise about \$50 billion per year after being fully phased in.

To reduce the deficit, the Congress could allocate the increased revenues to the general fund, as it did with a portion of the added revenues from the rate increases in 1990 and 1993, rather than using the additional revenues to finance additional highway spending.

REV-37 IMPOSE EXCISE TAXES ON WATER POLLUTANTS

Addition to Current-Law Revenues	Annual Added Revenues (Billions of dollars)					Cumulative Five-Year Addition
	1996	1997	1998	1999	2000	
Impose a Tax on Biological Oxygen Demand	1.2	1.8	1.8	1.8	1.8	8.4
Impose a Tax on Toxic Water Pollutants	0.4	0.6	0.6	0.6	0.6	2.8

SOURCE: Joint Committee on Taxation.

NOTE: Estimates are net of reduced income and payroll taxes.

Major facilities that discharge pollutants directly into water or indirectly into sewer systems are currently subject to regulations that specify pollution abatement technology or impose concentration limits on their discharges. Taxes on water pollutants discharged by those facilities could provide a significant source of revenue and could encourage further reductions in pollution below the level that current regulations require. Generally, firms subject to water pollution standards do not pay taxes or fees on effluents (discharges) that regulations still allow. There are two major types of water pollutants: biological oxygen demand (BOD) and toxics. One option is to impose a tax on BOD discharges. BOD is a common measure of water quality because excessive levels of BOD make it difficult to sustain aquatic life. (One BOD equals one milligram of oxygen consumed per 2.2 pounds of effluent.) A second option would impose a tax of varying rates on certain toxic discharges.

Taxes can reduce pollution in a cost-effective manner because they encourage firms with the lowest abatement costs to reduce pollution, while allowing firms with high abatement costs to continue polluting and pay the tax. Reductions in discharges caused by the tax would increase welfare if the additional abatement costs were less than or equal to the social benefits from reduced pollution levels. However, accurate estimates of additional social benefits from reducing pollution levels do not exist in many cases. In

addition, imposing a tax on one class of pollutants might reduce other pollutants because some wastewater treatment processes reduce several pollutants simultaneously. Constitutional issues concerning federal taxation of local governments may arise, however, requiring direct taxation of primary sources that discharge to publicly owned treatment works (POTWs) rather than taxing the POTWs themselves.

Tax on Biological Oxygen Demand. BOD measures the effect of pollutants that encourage algae growth, which in turn depletes oxygen necessary to sustain much aquatic life. Most of the high-volume dischargers (sometimes referred to as point sources) are POTWs, paper and pulp mills, food processors, metal producers, and chemical plants. Discharges by point sources total about 10.6 million pounds of effluent per day. About 9.6 million pounds of that amount are discharged by publicly owned treatment works.

The cost of controlling discharges at POTWs and many industries subject to the Clean Water Act regulations averages about 50 cents to 75 cents per pound of effluent removed. A charge on BOD discharges could encourage manufacturing facilities and POTWs that face lower abatement costs to reduce pollution. Assuming effluents record an average concentration of 22 BOD, a tax of about 64 cents per pound of effluent discharged would raise \$8.4 billion between 1996 and 2000. The revenue estimates cited here, however, assume that no additional abatement from

imposing the tax occurs and that firms cannot exceed allowable standards. If additional abatement was to occur, revenue collections would be lower.

Costs of administering a BOD water pollution excise tax would be small because allowable levels of BOD discharges are specified in the permits issued to every source of water pollution by state or federal governments. Levying a tax on effluents from POTWs, as well as from large industrial dischargers, would ensure that the tax base included all of the largest dischargers of BOD. If a tax could not be levied for constitutional reasons directly on POTW discharges, the POTWs themselves could collect the tax directly from polluters that discharge into sewer systems.

Tax on Toxic Water Pollutants. The manufacturing sector in the United States discharged more than 270 million pounds of toxics into water directly in 1992 and more than 380 million pounds of toxics into water indirectly through sewers. Toxic pollutants generally include organic chemicals (such as solvents and dioxins), metals (such as mercury and lead), and pesticides. Those toxics may pose a threat to the aquatic environment and to human health.

The amount of environmental harm that toxic water pollutants cause depends on their toxicity. The Environmental Protection Agency (EPA) has devised a weighing method to indicate the toxicity of various pollutants. Use of that weighing system makes it possible to measure the quantities of different types of toxics by their "toxic pound equivalents" (which the EPA defines as the pounds of the pollutant multiplied by its toxic weight). This option adopts tax rates developed by the Congressional Research Service in a study on the discharges of manufacturing

firms in 1987 and applies those rates to 1992 discharges. The Congressional Research Service defined five categories of pollutants based on their toxicities. The tax rates varied from 0.65 cents per pound for the least toxic category of pollutants to \$63.40 per pound for the most toxic category. Those rates correspond to a charge of \$32.35 per toxic pound equivalent. The variable tax rates provide firms with a greater incentive to reduce their most toxic discharges.

According to the EPA, the cost of controlling another toxic pound equivalent varies among industries, ranging from \$1.50 to \$606 per toxic pound equivalent (in 1991 dollars). The tax, therefore, could encourage industries and firms with low abatement costs to reduce their toxic discharges. Assuming that discharges of toxics remain the same, the tax would raise \$2.8 billion from 1996 through 2000. Revenues could be lower, however, if the amount of toxic pollutants the firms discharge decreases as a result of the tax. In addition, revenues would change when the toxic weights that are assigned to chemicals change. For example, this year's revenue estimate is considerably lower than last year's estimate because the EPA has decreased weights associated with many of the chemicals that are discharged in large quantities.

The Internal Revenue Service could use information that the EPA's Toxic Release Inventory (TRI) provides on toxic discharges by manufacturing firms to assess tax payments or the EPA could collect the tax on behalf of the Internal Revenue Service. An important consideration, however, is that the accuracy of TRI data is questionable. The TRI contains self-reported data, and many facilities that meet the reporting requirements fail to file reports or file inaccurate reports. To improve the accuracy of the TRI database and enhance enforcement, frequent auditing would be necessary.

REV-38 IMPOSE EXCISE TAXES ON AIR POLLUTANTS

Addition to Current-Law Revenues	Annual Added Revenues (Billions of dollars)					Cumulative Five-Year Addition
	1996	1997	1998	1999	2000	
Stationary Sources						
Impose a Tax of \$400 per Ton on Sulphur Dioxide	4.3	6.5	6.5	6.5	6.5	30.3
Impose a Tax of \$3,000 per Ton on Nitrogen Oxides	21.4	31.9	31.9	31.9	31.9	149.0
Impose a Tax of \$2,000 per Ton on Particulate Matter	4.3	6.4	6.4	6.4	6.4	29.9
Impose a Tax of \$5,000 per Ton on Volatile Organic Compounds	39.9	59.6	59.6	59.6	59.6	278.3
Mobile Sources						
Impose a One-Time Emission Tax (Averaging \$250 per Vehicle) on New Automobiles and Light Trucks	1.9	2.8	2.8	2.8	2.8	13.1

SOURCE: Joint Committee on Taxation.

NOTE: Estimates are net of reduced income and payroll taxes.

The Clean Air Act requires the Environmental Protection Agency (EPA) to establish National Ambient Air Quality Standards designed to protect public health and welfare. The EPA defines acceptable levels for six air pollutants: sulfur dioxide (SO₂), nitrogen oxides (NO_x), ozone (O₃), particulate matter (PM-10), carbon monoxide (CO), and lead (Pb). The pollutants SO₂ and NO_x are considered primarily responsible for acid rain, which the EPA believes degrades surface waters, damages forests and crops, and potentially increases the incidence of respiratory ailments. Large industrial sources, notably coal-fired electric utilities, emit significant quantities of those pollutants. Industrial production and the use of automobiles and trucks emit NO_x and volatile organic compounds (VOCs), which combine with sunlight and other compounds to produce ozone pollution. Electric utilities and motor vehicles emit particulate matter when they burn fossil fuels. Particulate

ulate matter can carry heavy metals and cancer-causing organic compounds into the lungs, thus increasing the incidence and severity of respiratory diseases. Carbon monoxide is produced primarily by motor vehicles and residential woodburning, and it can also pose direct health hazards. Exposure to lead may cause neurological disorders and cardiovascular disease. Discharges of lead were significantly reduced with the phaseout of leaded gasoline. In 1991, however, about 85 million people lived in areas that did not meet the EPA's National Ambient Air Quality Standards because of unacceptable levels of ozone, CO, or PM-10.

With some minor exceptions, firms subject to air pollution standards must incur the costs needed to reduce emissions to comply with regulations. Most firms do not, however, pay taxes or fees on emissions that regulations still allow, although major point

sources do pay approximately \$400 million annually in user fees to cover program costs. The Clean Air Act, as amended in 1990, adopts a new acid rain control program that introduces a market-based emission allowance system to reduce SO₂ emissions. An allowance is a limited authorization to emit a ton of SO₂. Affected electric utilities are allotted tradable allowances based on their past fuel usage and statutory limitations on emissions. Once the allowances are allotted, the act requires that annual SO₂ emissions not exceed the number of allowances held by each utility plant. Firms may trade allowances among each other, bank them for future use, or purchase them through periodic auctions held by the EPA. The allowance market is structured to encourage firms with relatively low costs of abatement to reduce their emissions and sell surplus allowances to firms that have relatively high costs of abatement.

The incremental cost of controlling pollution for stationary sources varies, given the numerous industrial and other sources. The four options that tax pollution from stationary sources would base the tax rates on an estimate of the average cost of reducing an additional ton of pollution. Some firms with low abatement costs may reduce pollution below allowable standards in response to the taxes. The option that taxes emissions from mobile sources (vehicles) could also reduce pollution levels. (See REV-34 and REV-36 for other taxes that might reduce emissions of air pollutants.) Reductions in emissions caused by the taxes would increase welfare if additional abatement costs were less than or equal to the social benefits from reduced pollution levels. However, accurate estimates of additional social benefits from reducing pollution levels do not exist in many cases.

The revenue estimates cited here, however, assume that no additional abatement from imposing the taxes occurs and that firms cannot exceed allowable standards. If additional abatement was to occur, revenue collections would be lower.

Tax Emissions of SO₂ and NO_x from Stationary Sources. Imposing taxes of \$400 per ton of SO₂ emissions and \$3,000 per ton of NO_x emissions from all stationary sources would raise roughly \$30 billion for SO₂ and \$149 billion for NO_x from 1996 through 2000. Basing the tax on the terms granted in air pollution permits, which all polluting firms must ac-

quire, would minimize costs of administration. The Internal Revenue Service (IRS) could collect the tax itself or the state and local government agencies that issue pollution permits could collect the tax on behalf of the IRS. The present monitoring and reporting system for stationary sources that the EPA and state regulators operate could be used to enforce the tax. If polluters' actual emission levels were lower than permitted levels, polluters could apply for revised permits based on those actual levels. If the tax was based on permitted emissions levels, it would be equivalent to the government's selling pollution permits at their fair market price.

The proposed tax on SO₂ could reduce pollution below the mandated amounts contained in the Clean Air Act Amendments of 1990 (CAAA). Some electric utilities and manufacturing plants might switch to lower-sulfur coals because that would be less costly than paying the tax, and others might choose to operate their most heavily emitting plants less frequently or to install new SO₂ control devices. The tax system could interact with the tradable allowance system, thereby allowing the government to collect revenues based on emission levels and firms to collect the proceeds from the sale of allowances. (The average sale price of allowances would probably adjust downward in the event of a tax.) The tax on NO_x could also reduce emissions below mandated levels contained in the CAAA if some firms adopt currently available abatement techniques whose capitalized costs per unit of reduced emissions are lower than the tax rate.

Tax Emissions of PM-10 from Stationary Sources. A tax of \$2,000 per ton of particulate matter would raise about \$30 billion from 1996 through 2000, based on levels of emissions that the EPA projects under current regulations. Some electric utilities and manufacturing plants might install improved electrostatic precipitators, wet scrubbers, or other equipment that reduces PM-10 emissions to lower their tax burdens. This tax could be administered in the same manner as the taxes on SO₂ and NO_x.

Tax Emissions of VOCs from Stationary Sources. Stationary sources of volatile organic compounds range from huge industrial facilities such as chemical plants, petroleum refineries, and coke ovens to small sources such as bakeries and dry cleaners. Their vast number and diversity make it difficult to estimate

emissions and costs of abatement. A tax of \$5,000 per ton on all stationary-source VOC emissions might promote some abatement and would generate about \$278 billion in revenues from 1996 through 2000.

The advantage of a broad-based tax on VOCs is that it would capture small sources, which the EPA estimates are responsible for approximately 80 percent of all emissions from stationary sources. Because stationary sources emitting less than 2.5 tons of VOCs per year are not currently subject to federal regulation, a broad-based VOC tax would be administratively more difficult to carry out than a tax on large sources alone. Assessing the tax on small sources through technology-based estimates of emissions rather than measured emissions would reduce administrative costs, but make the incentives less precise. Alternatively, imposing the tax only on large stationary sources would raise about \$12 billion annually.

Tax Emissions of NO_x, VOCs, and CO from Mobile Sources. A one-time tax imposed on new automobiles and light trucks could be based on grams of NO_x, VOCs, and CO emitted per mile as estimated

under the EPA emission certification tests required on every new vehicle. The tax could be administered like the "gas guzzler" excise tax. The EPA would determine the tail-pipe emissions for each new model light-duty vehicle, and the tax would be based on those emission rates. The auto dealer would collect the tax on behalf of the Internal Revenue Service from the vehicle's purchaser.

Such a tax averaging \$250 per vehicle could raise \$13 billion in revenues from 1996 through 2000. The revenue estimates presented here are based on projected new car sales and assume that new cars meet, on average, current tail-pipe standards. Revenues could be lower than projected if the tax induced consumers to purchase more fuel-efficient vehicles. Also, if new cars became cleaner over time, revenues would be lower than projected. Vehicles made in earlier years have been excluded from the estimate because of the administrative problems of collecting a tax on older vehicles. A disadvantage of excluding them, however, is that earlier-year vehicles represent more than 90 percent of the light-duty vehicles in use and an even greater share of emissions. In addition, the tax would encourage people to delay purchases of new vehicles by raising their price.

REV-39 TAX ADDITIONAL OZONE-DEPLETING CHEMICALS

Addition to Current-Law Revenues	Annual Added Revenues (Billions of dollars)					Cumulative Five-Year Addition
	1996	1997	1998	1999	2000	
Impose an ODC Tax on Methyl Bromide at Current Rates	0.1	0.2	0.2	0.2	0.2	0.9
Impose an ODC Tax on HCFCs at Current Rates	0.1	0.1	0.1	0.2	0.2	0.7

SOURCE: Joint Committee on Taxation.

NOTE: Estimates are net of reduced income and payroll tax revenues.

In 1989, the Congress imposed an excise tax on chlorofluorocarbons (CFCs) and halons, chemicals with high potential to deplete ozone. The Congress added carbon tetrachloride and methyl chloroform to the list of chemicals subject to tax in 1990. It later increased the tax rates on these ozone-depleting chemicals (ODCs) in the Energy Policy Act of 1992. The tax rates differ among the various ODCs, with the rate on any particular chemical being the product of the base tax rate and the ODC's ozone-depletion factor--a measure of the chemical's potential to damage the ozone layer. The base tax rate is \$5.35 per pound of ODC in 1995, increasing to \$7.60 per pound in 2000. The ozone-depletion factors for the ODCs currently subject to tax range from 0.1 (for methyl chloroform) to 10 (for halon 1301). Most of the CFCs have ozone-depletion factors around 1. The chemicals currently taxed are also regulated by the Environmental Protection Agency (EPA) and are scheduled to be phased out by January 1, 1996. (Halon was phased out by January 1, 1994.)

The EPA regulates additional ODCs that are not currently taxed--namely, methyl bromide and hydrochlorofluorocarbons (HCFCs). At the end of 1992, more than 100 countries recognized the concerns of scientists about those two types of ODCs and added them to the Montreal Protocol, a 1987 accord that set international production limits and phaseouts on most of the known harmful ODCs. Expanding the ODC tax to cover those additional chemicals would lead to more consistent treatment among the various ODCs.

The ozone-depletion factor for methyl bromide is around 0.7, whereas the factors for HCFCs are much lower and fall in the 0.01 to 0.09 range.

Broadening the tax base to include methyl bromide and HCFCs could raise \$1.6 billion from 1996 through 2000. The new taxes would raise prices of the chemicals and some related retail prices. Coupled with the regulatory phaseouts, those taxes would work to encourage further development of substitutes or alternative processes.

Methyl bromide is used in agriculture as a pesticide and multipurpose fumigant. Its most prominent agricultural use is as a soil (fungicide) fumigant. Scientific evidence of its ozone-depletion factor (around 0.7) suggests that methyl bromide is more harmful than some of the chemicals that are taxed under current law. EPA regulations freeze methyl bromide production at 1991 levels and phase out the production and importation of methyl bromide by the year 2001. Taxing the chemical at current-law rates could raise \$0.9 billion from 1996 through 2000. The extent to which the tax would encourage the use of alternatives, however, is unclear. Substitutes may not currently exist for some uses of methyl bromide. Whether the tax is paid (through continued use of methyl bromide) or avoided (through substitution for methyl bromide), the tax might reduce the supply and thereby raise the consumer prices of certain types of produce, such as tomatoes, strawberries, and grapes.

HCFCs are considered to be valuable near-term substitutes for certain applications of CFCs--for example, as a refrigerant in chillers or as a blowing agent in foam. HCFCs have less than 10 percent of the ozone-depletion potential of CFCs. The potential is not negligible, however, because of the chlorine still present in HCFCs. As a result, EPA regulations substantially reduce the production of HCFCs between 2003 and 2020 and completely phase out remaining production by 2030. Although applying the ODC tax to HCFCs would result in a much lower tax rate than is applied to CFCs, taxing HCFCs at current-law rates could raise \$0.7 billion from 1996 through 2000 and could further spur the adoption or development of alternatives. Hydrofluorocarbons (HFCs), which contain no chlorine, are already being manufactured and used in certain industrial applica-

tions as replacements for both CFCs and HCFCs. Unfortunately, HFCs are not currently substitutable for all uses of HCFCs. For example, although HFCs are used in at least some types of air conditioners and refrigerators, they are not used in the construction of cellular rigid-foam insulation. A tax on HCFCs would therefore be likely to have different incentive effects depending on industrial use. In addition, although HFCs do not deplete the ozone, some are known to have greater global-warming potential than HCFCs as a result of their longer atmospheric lifetimes, and some may be inferior in terms of energy efficiency. Consequently, shifting from HCFCs to HFCs may involve trading one type of environmental risk for another. HFCs are also more expensive to produce.

Appendixes

Appendix A

Estimated Savings in the Department of Defense Budget for Selected National Defense Options

Table A-1 shows estimated savings in the national defense budget for options in Chapter 2 that affect military or civilian pay. Estimated savings in the defense budget for those options would be higher because certain payments by the Depart-

ment of Defense result in intragovernmental transfers that are offset within the total federal budget. The most significant of those payments are the accrual payments for military retirement and the government's contribution for civilian retirement systems.

Table A-1.
Savings in the DoD Budget for Selected Options in Budget Function 050

	Annual Savings from the 1995 Plan (Millions of dollars)					Cumulative Five-Year Savings
	1996	1997	1998	1999	2000	
DEF-01 REDUCE NUCLEAR DELIVERY SYSTEMS WITHIN OVERALL LIMITS OF START II						
Budget Authority	50	490	600	760	950	2,850
Outlays	-70	30	270	550	810	1,590
DEF-05 REDUCE THE NUMBER OF AIRCRAFT CARRIERS AND AIR WINGS TO 10						
Budget Authority	520	1,070	1,110	1,150	1,190	5,040
Outlays	390	880	1,010	1,090	1,150	4,520
DEF-07 ELIMINATE FRIGATES FROM THE NAVAL FORCE						
Budget Authority	90	270	470	680	870	2,380
Outlays	70	220	390	590	780	2,050

(Continued)